MATERIAL SAFETY DATA SHEET

Date Printed: 10/15/2007
Date Updated: 02/01/2006
Version 1.6

Section 1 - Product and Company Information

Product Name	PROPANE, 99.97%
Product Number	536172
Brand	ALDRICH
Company	Sigma-Aldrich
Address	3050 Spruce Street SAINT LOUIS MO 63103 US
Technical Phone:	800-325-5832
Fax:	800-325-5052
Emergency Phone:	314-776-6555

Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313
PROPANE	74-98-6	No

Formula	C3H8
Synonyms	Dimethylmethane * Liquefied petroleum gas * LPG * Propane (ACGIH:OSHA) * n-Propane * Propyl hydride * R 290
RTECS Number:	TX2275000

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Flammable (USA) Extremely Flammable (EU).
Extremely flammable.
Danger: flammable high-pressure liquid and gas.

HMIS RATING

HEALTH: 1
FLAMMABILITY: 4
REACTIVITY: 0

NFPA RATING

HEALTH: 1
FLAMMABILITY: 4
REACTIVITY: 0

For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures

ORAL EXPOSURE

If swallowed, wash out mouth with water provided person is conscious. Call a physician.

INHALATION EXPOSURE

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

DERMAL EXPOSURE
In case of contact, immediately wash skin with soap and copious amounts of water.

EYE EXPOSURE
Contamination of the eyes should be treated by immediate and prolonged irrigation with copious amounts of water. Assure adequate flushing of the eyes by separating the eyelids with fingers.

Section 5 - Fire Fighting Measures

FLAMMABLE HAZARDS
Flammable Hazards: Yes

EXPLOSION HAZARDS
May form explosive mixtures with air Vapor may travel considerable distance to source of ignition and flash back. Container explosion may occur under fire conditions.

FLASH POINT
- 155.2 ˚F - 104.0 ˚C Method: closed cup

EXPLOSION LIMITS
Lower: 2.1 % Upper: 9.5 %

AUTOIGNITION TEMP
450 ˚C

FLAMMABILITY
N/A

EXTINGUISHING MEDIA
Suitable: For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.

FIREFIGHTING
Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
Specific Hazard(s): Extremely flammable. Vapor may travel considerable distance to source of ignition and flash back. Emits toxic fumes under fire conditions.
Specific Method(s) of Fire Fighting: Do not extinguish burning gas if flow cannot be shut off immediately. Use water spray or fog nozzle to keep cylinder cool. Move cylinder away from fire if there is no risk.

Section 6 - Accidental Release Measures

PROCEDURE TO BE FOLLOWED IN CASE OF LEAK OR SPILL
Evacuate area and keep personnel upwind. Shut off all sources of ignition. Shut off leak if there is no risk.

PROCEDURE(S) OF PERSONAL PRECAUTION(S)
Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

METHODS FOR CLEANING UP

Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

HANDLING

User Exposure: Do not breathe gas. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

STORAGE

Suitable: Keep tightly closed. Keep away from heat, sparks, and open flame. Use with equipment rated for cylinder pressure, and of compatible materials of construction. Close valve when not in use and when empty. Make sure cylinder is properly secured when in use or stored Cylinder temperature should not exceed 125˚F (52˚C).

Unsuitable: Store away from heat and direct sunlight

SPECIAL REQUIREMENTS

Contents under pressure.

Section 8 - Exposure Controls / PPE

ENGINEERING CONTROLS

Warning: suck-back into cylinder may cause rupture. Use back-flow-preventive device in piping.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory: Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator.

Hand: Compatible chemical-resistant gloves.

Eye: Chemical safety goggles.

GENERAL HYGIENE MEASURES

Wash contaminated clothing before reuse. Wash thoroughly after handling.

EXPOSURE LIMITS, RTECS

Country	Source	Type	Value
USA	ACGIH	TWA	2500 PPM
USA	MSHA Standard		
Remarks: Asphyxiants/Gases.			
USA	OSHA.	PEL	8H TWA 1000 PPM (1800 MG/M3)
New Zealand OEL			
Remarks: check ACGIH TLV			
USA	NIOSH	TWA	1000 PPM

EXPOSURE LIMITS

Country	Source	Type	Value
Poland		NDS	1,800 mg/m3
Poland		NDSCh	-
Poland		NDSP	

Section 9 - Physical/Chemical Properties

Appearance Physical State: Compressed gas

Property	Value	At Temperature or Pressure
Molecular Weight	44.1 AMU	
pH	N/A	
BP/BP Range	- 42.1 ˚C	760 mmHg
MP/MP Range	- 188.0 ˚C	
Freezing Point	N/A	
Vapor Pressure	6399.2 mmHg	21.1 ˚C
Vapor Density	1.5 g/l	
Saturated Vapor Conc.	N/A	
SG/Density	1.55 g/cm3	
Bulk Density	N/A	
Odor Threshold	N/A	
Volatile%	N/A	
VOC Content	N/A	
Water Content	N/A	
Solvent Content	N/A	
Evaporation Rate	N/A	
Viscosity	N/A	
Surface Tension	N/A	
Partition Coefficient	N/A	
Decomposition Temp.	N/A	
Flash Point	- 155.2 ˚F - 104.0 ˚C	Method: closed cup
Explosion Limits	Lower: 2.1 % Upper: 9.5 %	
Flammability	N/A	
Autoignition Temp	450 ˚C	
Refractive Index	N/A	
Optical Rotation	N/A	
Miscellaneous Data	N/A	
Solubility	N/A	

N/A = not available

Section 10 - Stability and Reactivity

STABILITY

Reactions to Avoid: Heating barium peroxide under gaseous propane at ambient pressure resulted in a violent exothermic reaction. Reacts explosively with chlorine dioxide.
Materials to Avoid: Strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide.

Section 11 - Toxicological Information

ROUTE OF EXPOSURE

Skin Contact: May cause skin irritation.
Skin Absorption: May be harmful if absorbed through the skin.
Eye Contact: May cause eye irritation.
Inhalation: Can cause rapid suffocation. Material may be irritating to mucous membranes and upper respiratory tract. May be harmful if inhaled.
Ingestion: May be harmful if swallowed.

SIGNS AND SYMPTOMS OF EXPOSURE

Inhalation of propane at concentrations sufficent to exclude an adequate supply of oxygen to the lungs can result in dizziness, drowsiness, and eventual unconsciousness. It has a narcotic action and acts as a depressant on the central nervous system.

Section 12 - Ecological Information

No data available.

Section 13 - Disposal Considerations

APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION
Contact a licensed professional waste disposal service to dispose of this material. Observe all federal, state, and local environmental regulations.
APPROPRIATE METHOD OF DISPOSAL OF CONTAMINATED PACKAGING
Caution: no-return cylinder. Do not reuse. Empty cylinder will contain hazardous residue. Follow proper disposal techniques.

Section 14 - Transport Information

DOT
Proper Shipping Name: Propane [see also] Petroleum gases, liquefied
UN#: 1978
Class: 2.1
Packing Group: None
Hazard Label: Flammable gas
PIH: Not PIH

IATA
Proper Shipping Name: Propane
IATA UN Number: 1978
Hazard Class: 2.1
Not Allowed - Aircraft: Cargo aircraft only. Not permitted on passenger aircraft.

Section 15 - Regulatory Information

EU DIRECTIVES CLASSIFICATION
Symbol of Danger: F+
Indication of Danger: Extremely Flammable.
R: 12
Risk Statements: Extremely flammable.
S: 9-16
Safety Statements: Keep container in a well-ventilated place. Keep away from sources of ignition - no smoking.

US CLASSIFICATION AND LABEL TEXT
Indication of Danger: Flammable (USA) Extremely Flammable (EU).
Risk Statements: Extremely flammable.
Safety Statements: Keep container in a well-ventilated place. Keep away from sources of ignition - no smoking.
US Statements: Danger: flammable high-pressure liquid and gas.

UNITED STATES REGULATORY INFORMATION
SARA LISTED: No
TSCA INVENTORY ITEM: Yes

CANADA REGULATORY INFORMATION
WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.
DSL: Yes
NDSL: No

DISCLAIMER

For R&D use only. Not for drug, household or other uses.

WARRANTY

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.